URINARY EXCRETION OF NICOTINIC ACID IN VARIOUS DERMATOSES[1]

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In an attempt to study the role of nicotinic acid in various dermatoses, quantitative determinations of the urinary excretion were done. Fraser, Topping and Sebrell (1) found that dogs exhibiting symptoms of black-tongue excreted less nicotinic acid in the urine than when they were symptom free. They suggested that this test could be correlated with the clinical condition of the animal.

METHOD

The bacteriological assay method of Lwoff and Querido (2, 3) was followed with several minor modifications. The medium consists of three solutions.

1. Salt Solution: $(NH_4)_2SO_4$, 0.75 gm.; KH_2PO_4, 4.5 gm.; NH_4Cl, 0.5 gm.; $Mg.SO_4$, 0.05 gm.; H_2O (double distilled), 1000 cc.

Sodium Hydroxide, (10%) is added until the pH equals 7.5 as measured by the glass-electrode potentiometer.

2. Glucose, 30 gm.; water (double distilled), 100 cc.

3. Ferric Citrate (U.S.P.), 1.00 gm.; water (double distilled), 1,000 cc.

The three solutions were autoclaved separately for 20 minutes at 115°C. Then to 95 cc. of the salt solution are added 1 cc. of the glucose solution and 0.5 cc. of the iron citrate solution. This combined medium is then tubed in amounts of 9.6 cc. per test tube. To this are added 0.2 cc. of a suspension of B. Proteus (X19). Urine to be assayed, after Berkfeld filtration, is made up in various dilutions and 0.2 cc. is added to each tube. The control tubes contain 0.2 cc. of nicotinic acid solution of varying dilutions. All solutions are tested for sterility. After incubation for 48 hours at 37°C., readings are obtained by comparing the highest dilution of urine supporting growth with the controls containing known amounts of nicotinic acid.

FINDINGS

The findings in normal persons are shown in table 1, those in various dermatoses in table 2.

DISCUSSION

In apparently healthy individuals the 24 hour urinary excretion of nicotinic acid varied from 1.2 mgm. to 4.0 mgm. These values correspond closely to the range of values for urinary nicotinic acid as determined by chemical methods by Porje (4), Ritzert (5) and Bandier (6).

[1] From Dept. of Dermatology, College of Physicians and Surgeons, Columbia University, N. Y. The work was interrupted when the author was called for active service with the U. S. Army Medical Corps.

There was considerable variation in the determinations done on the same individuals on different days.

TABLE 1

NUMBER	SUBJECT	AGE	WEIGHT	SEX	COLOR	URINARY EXCRETION OF NICOTINIC ACID PER TWENTY FOUR HOURS, IN MILLIGRAMS
			pounds			
1	S. I. G.	28	130	M	W	1.5
2	S. I. G.	28	130	M	W	2.4
3	S. I. G.	28	130	M	W	4.0
4	S. I. G.	28	130	M	W	3.4
5	S. I. G.	28	130	M	W	1.2
6	L. K.	30	150	M	W	2.6
7	W. A.	36	120	M	W	3.5
8	S. K.	35	142	M	W	1.9
9	C. I.	22	160	M	W	2.3
10	D. C.	31	145	M	W	3.9

TABLE 2

NUMBER	SUBJECT	AGE	WEIGHT	SEX	COLOR	DIAGNOSIS	URINARY EXCRETION OF NICOTINIC ACID PER TWENTY FOUR HOURS, IN MILLIGRAMS
			pounds				
1	R.	23	160	M	W	Lupus erythematosus	3.9
2	I. A.	32	140	M	W	Lupus erythematosus	2.5
3	D. R.	44	150	M	W	Lichen planus	1.1
4	J. A.	39	120	M	W	Lichen planus	2.8
5	W.	40	135	M	W	Psoriasis	2.7
6	A. C.	32	140	M	W	Psoriasis	1.9
7	P. C.	19	110	F	W	Acne vulgaris	4.1
8	H. L.	23	160	M	W	Acne vulgaris	2.2
9	I. G.	21	103	F	W	Acne vulgaris	1.6
10	M. B.	24	132	F	C.	Arsenical dermatitis (lichenoid)	2.9
11	I. S.	29	160	F	C.	Fixed drug eruption (neoarsphenamine)	1.4
12	J. R.	22	150	M	W	Pityriasis rosea	3.7
13	J. B.	23	142	M	W	Pityriasis rosea	2.1
14	H. J.	24	112	F	W	Urticaria	1.4
15	S. L.	61	150	M	W	Urticaria	2.9
16	L. C.	48	164	M	W	Nummular eczema	4.0

In sixteen patients with various dermatoses the findings were all within the normal range. The two patients with lupus erthematosus did not give low values.

SUMMARY

The small number of determinations preclude drawing any definite conclusion. In the small number of dermatologic patients examined, the urinary excretion of nicotinic acid was within normal limits.

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